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CYSTITIS OF WOMEN.

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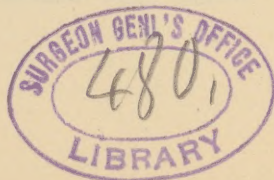
IRRIGATION OF THE BLADDER IN CHRONIC CYSTITIS OF WOMEN.¹

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It is not the purpose of this paper to discuss those forms of cystitis that result from the presence of calculi, neoplasms, or tuberculous deposits in the bladder. Irrigation of the bladder will prove only an adjunct in the mitigation of such conditions. If we exclude these causes we shall still have a sufficiently comprehensive etiology for chronic cystitis. Common causes of simple chronic cystitis in women are: Traumatism during labor; gonorrhea; anteversion; anteflexion; traction by a prolapsed uterus; pelvic peritonitis and cellulitis, resulting in cicatricial bands; and irritation following lithemia of long standing.

So frequently has failure attended efforts to obtain perfect cure in these cases that unfortunately a tendency has arisen to resort to radical measures, like cystotomy or Emmet's buttonhole operation. None can fail to recognize the *raison d'être* of cyst-

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otomy in its proper domain ; but a vigorous protest should be made against precipitately engaging in a dangerous surgical operation, when we have at hand a procedure that is more rapidly curative, and vastly more scientific. The principle of drainage in Emmet's operation may, upon the whole, be accepted as correct. But, as a matter of fact, what is gained by its adoption in practice is a new and easy channel of reinfection. Too often it is made the refuge of indolent practitioners who seek to escape the laborious details of a more elegant method of treatment.

It must be conceded that irrigation of the bladder has proved ineffective in the hands of many who have attempted it in an awkward and unscientific manner. How can a physician hope for success when he violates every law of asepsis, or is content to consign the difficult and delicate details of this procedure to the nurse or some member of the family? All too often the busy practitioner, finding it impossible to undertake the tedious task of washing out the bladder, has recourse to drugs as a convenient substitute. Diuretics and genito-urinary tonics have their place in therapeutics as adjuvants, but they are slow in their action on the diseased vesical membrane, and frequently have a disastrous effect on the digestion of patients. I am convinced that they are more often the cause of albuminuria, cloudy swelling of the renal epithelium, and chronic parenchymatous nephritis than the average practitioner would be free to acknowledge.

Since the advent of bacteriology the employment of drugs in surgical diseases is gradually becoming more limited. Nowhere is this fact more

conspicuous than in the treatment of catarrhal inflammations of the stomach and bladder. In gastritis and cystitis the leading principle of treatment is the arrest of fermentation and the pathologic lesions induced by fermentation. This is best accomplished by means of irrigation with antifermentative solutions, and not by drugs. A necessary condition of treatment in both of these states is rest, not only of the organ affected, but also of the entire body. In gastritis we may rest the stomach by rectal alimentation. Although organic rest is not feasible in cystitis, yet, by having the patient assume the recumbent position, the pressure of superimposed viscera is removed, traction from cicatricial bands is relieved, and the bladder is free to rise in the pelvis.

Lavage should not be undertaken in any case of cystitis unless the patient consents to go to bed and stay there until cured. Before attempting to irrigate a diseased bladder the operator must recognize the fact that absolute cleanliness is the key to success. I am of the opinion that not even a capital operation demands more rigid and uncompromising adherence to the principle of asepsis.

The following instruments will be required: A new No. 10 soft-rubber velvet-eye catheter. This should be kept in a salt-mouth glass-stoppered bottle containing a 1:1000 solution of mercuric chloride. There should be a porcelain basin in which to scald the catheter; also a 1:2000 solution of bichloride in glycerin for lubrication. A fountain syringe, having a hard-rubber screw cut-off to limit the stream, will be necessary.

The antiseptic powder to be used in the solution injected must be kept in a perfectly clean glass jar. In preparing this solution a pitcher of the capacity of a quart will be needed. A quantity of cool sterilized water should be at hand, kept in a sterilized bottle having a sterilized cotton stopper. Boiling water may be obtained from a clean tea-kettle that has a cotton filter tied over the spout.

The formula for the antiseptic powder that I use is as follows :

R.—Boric acid	.	.	.	.	.	3j.
Sodium biborate	.	.	.	.	.	3iv.
Sodium chloride	.	.	.	.	.	3ij.—M.

Experiment has proved that boric acid alone is but feebly germicidal ; but, when dissolved in hot water in the presence of borax, a solution of real antiseptic value is obtained. The amount of the powder required at each irrigation will vary with the case, but, as a rule, a teaspoonful to a pint of warm water, or a saturated solution, will be well borne. It is better to dissolve the powder in boiling water, the temperature of which can afterward be reduced by the addition of cool, sterilized water. No other antiseptic tried has been found to give satisfaction. Mercuric chloride, carbolic acid, and potassium permanganate have all been employed, but were badly tolerated, even in the weakest possible solutions.

In cases in which a tonic astringent was indicated I have employed a solution of silver nitrate, from $\frac{1}{8}$ — $\frac{1}{2}$ grain to the ounce, injecting an ounce and a half immediately after the irrigation on every second

or third day, and allowing the patient to retain the solution about thirty minutes. Many cases will be encountered that will not bear this solution stronger than $\frac{1}{8}$ or $\frac{1}{4}$ grain to the ounce. In all cases its use should be governed by the condition of the bladder and should be employed in the later stages of the treatment. At no time should the injection of silver nitrate be preceded by an irrigation with a saline solution. Simple sterilized water will be sufficient and will obviate the precipitation of silver chloride.

Much has been said and written in regard to the proper quantity of sterilized water to be used at each irrigation. In my experience, the average case has done well when not less than four ounces have been used; but the progress has been much faster when eight ounces could be tolerated. Before the case has been cured I have been able to use from sixteen to twenty-four ounces at each irrigation, with unquestioned benefit to the patient. This quantity of liquid does not occasion vesical distention or injury to the bladder-wall, because not more than from two to four ounces are injected at once, the process of siphoning off being repeated four or five times during the irrigation. The comfort of the patient may usually be accepted as a guide. There will be found a wide range of capacity, governed largely by the original size of the bladder in health, the degree of pathologic change in its walls, and the irritability present in disease.

In cases in which decomposition is prominent, there exist little saccules in the mucous membrane where erosion has occurred from the presence of

bacteria, triple phosphates, and purulent débris. These pockets can never be reached and cleansed unless the mucous membrane can be gently unfolded and spread out as a smooth surface. It is, therefore, often necessary to produce gentle distention by hydrostatic pressure, in order to eliminate these foci of fermentation, which cause and perpetuate the trouble. Each operator must determine for himself the degree of distention with which it is safe to begin, remembering that in cases in which fermentation is most marked there is greatest erosion of the bladder wall. One treatment daily will ordinarily be sufficient, but conditions are often present under which two treatments a day give by far the more speedy and satisfactory results.

It has been my object in discussing this question of irrigation to call attention to the supreme importance of absolute cleanliness. Experience has shown unmistakably that when ordinary antiseptic precautions were taken the results were fair and moderate; but when extraordinary precautions were observed, the results were accurate and perfect. And these results were not measured by gross methods and misleading symptoms, but by the unerring aid of frequent and searching microscopic examinations.

In preparing for irrigation of the bladder, the first step is to scald out a small pitcher. In this the antiseptic powder is dissolved in a few ounces of boiling water. While waiting for perfect solution, a pint and a half of boiling water should be poured into the fountain syringe and allowed to remain until the syringe is needed. The catheter, which

has been kept in a bottle of 1 : 1000 bichloride solution, is removed to a small basin containing boiling water. The antiseptic solution can now be reduced in temperature by the addition of cool, sterilized water taken from the cotton-plugged bottle already mentioned. The prepared solution is now poured into the fountain syringe, all air is expelled, and the cut-off screwed down. Meanwhile, the nurse has cleansed the external genitals of the patient with a 1 : 2000 bichloride solution. There remains only to pass the catheter and connect it with the tube of the syringe. Taking the catheter from the hot water with fingers disinfected in an antiseptic solution, bichloride glycerin is poured over two inches of the end as a lubricant, and the instrument, in a good light, is passed instantly into the bladder.

If the bladder is full, considerable urine must be allowed to escape to make room for the antiseptic solution. If there is little urine, there is danger in allowing it all to run out and permitting germ-laden air to be introduced through the catheter. The only convenient means of expelling the air from the catheter, when this instrument is first introduced into the bladder, is to allow a small stream of urine to pass outward through it. Before the catheter is connected with the syringe tube, all air must likewise have been expelled from the latter by allowing a column of the antiseptic solution to pass through. At first, a gentle stream is turned on. The force is governed by the elevation of the reservoir and by the screw cut-off. The importance of injecting slowly cannot be too strongly emphasized.

When the patient begins to feel a sense of slight

distention the tube and catheter are disconnected. While the operator cuts off the stream from the syringe with his right fingers, with his left he guides the stream from the catheter into a quart bowl placed between the patient's legs. The operation of siphoning must not be carried to the extent of absolutely emptying the bladder. A little fluid should be left in to prevent the admission of air and to keep the bladder-walls from collapsing and causing spasm. It is best to leave at least an ounce of the antiseptic solution in the bladder after the last siphoning.

The following cases are cited in illustration of the foregoing treatment :

CASE I.—A married woman, thirty years old, eight months previously to coming under treatment for cystitis, had an abortion at the third month, followed by pelvic peritonitis. The uterus was anteverted and held in that position by firm cicatricial bands. For five or six months she had complained of urethral irritation. A few days before I was called, she had suffered exposure, which lighted up the old pelvic inflammation and at the same time aggravated the irritation of the bladder. There was present the characteristic desire to urinate frequently, the act being attended with intense pain. The pelvic inflammation was treated by rest, fomentations, and saline laxatives. Opium was used in such quantity as would relieve pain and secure rest. During this treatment the urine was analyzed and found to be swarming with bacteria, while pus, mucus, and calcium oxalate were found in great quantities. Repeated analyses showed no variation in these constituents

Until the subacute symptoms subsided, bland

drinks and diluents were given copiously to render the urine less irritating. At the first attempt to irrigate the bladder a silver catheter was used, but this could not be tolerated, even with the liberal use of cocaine. There was intense spasm of the vesical sphincter, and much annoyance resulted from blocking of the eye of the catheter with mucus. The attempt to use a recurrent silver catheter, with a large eye, caused such exquisite pain and such injury to the mucous membrane of the urethra, from the spasm produced by the margins of the eye, that any further attempt to use this ill-constructed instrument seemed barbarous. The irrigation was finally concluded with a simple velvet-eye soft-rubber catheter, No. 10, from the use of which the patient experienced great relief.

The second irrigation was attended with much less difficulty, and at each repetition the irritability was found greatly diminished. Daily examination of the urine showed that the pus and bacteria were decreasing. Within fourteen days from the first irrigation, not a motile bacillus or micrococcus could be found within the field, while the pus had diminished to only an occasional corpuscle. For the last four or five days of the treatment an injection of an ounce and a half of a solution of silver nitrate was given every other day. This injection followed an irrigation with plain sterilized water and was allowed to remain in the bladder as long as the patient could comfortably bear it, which was rarely more than thirty minutes. For the greater part of the time two antiseptic irrigations were given daily. Basham's mixture was prescribed after active inflammation had subsided. As soon as all pathologic products had disappeared from the urine and the patient had gained sufficient strength to travel, she was sent to the mountains. Although all treatment was withdrawn, save the copious use

of water internally, she continued to improve and at the end of two months had regained much more than her usual weight and vigor.

This patient labored under the disadvantage of not being able to take milk, which is almost indispensable in the treatment of every form of cystitis. It is now one year since the case was first seen and inquiry has shown that no relapse has occurred.

CASE II.—A woman, twenty-eight years old, had been married twelve years, but had borne no children. Her general health was excellent, and she was remarkably well nourished. When first seen she could scarcely walk the distance of a square, and was annoyed beyond endurance by a ceaseless desire to urinate. This condition, which had existed for four or five months, was growing steadily worse, until the constant desire to pass water and the agony attending the act, made her a recluse from society. Her physical constitution was so fine that as yet the suffering had made but slight impression on her general health. Mentally she had become morbid and depressed and considered herself in a desperate condition. There could be no doubt as to the diagnosis, and the microscope clearly proved it to be a case of chronic cystitis. Pus, bacteria, mucus, and desquamated epithelium were present in unusual quantity. The urine became intensely foul within ten minutes after removal from the bladder, showing the bacteria to be especially active. The patient was put to bed and kept there until she fully recovered. The bladder was irrigated twice daily for fifteen days. The strictest detail of cleanliness was carried out from the first. To render the renal secretion abundant and bland, a bottle of Vichy was prescribed for each day, together with

as much Manitou as could be taken. The diet consisted largely of milk, with a small variety of non-stimulating food. Frequent examination of the urine showed the pus and bacteria to be vanishing rapidly, and by the twelfth day no pathologic products could be found.

It should be stated that in every case in which the urine is examined as a guide for treatment, every vessel and instrument that comes in contact with the urine must previously have been sterilized. Without this precaution conclusions would be seriously vitiated.

Toward the end of the treatment an injection of two ounces of solution of silver nitrate, one-eighth grain to the ounce, was given every other day until four injections had been given. The tonic effect in this instance was especially noticeable. No internal medication was employed, as there seemed to be no indication for it. The patient was confined to bed for twenty days, but there were four days of intermission in the treatment on account of menstruation. After the urine had for three days been free from bacteria and pus, the patient was discharged. Without the slightest discomfort she resumed her social privileges and duties, from which she had believed herself forever ostracized.

CASE III —A young married woman, twenty-four years old, three months before coming under observation had been delivered of a child at term by a charlatan who had shamefully neglected her. Ever since her labor she had been confined to bed. Every attempt to assume the erect posture and walk about was attended with great discomfort and suffering. No definite idea could be gained as to the source

of irritation, as the patient located her pains in almost every part of the body. Attention was first directed to the pelvis, but so tender was that area that examination occasioned the most intense suffering. Only digital examination could be made; this revealed an anteverted uterus, a lacerated os, and cicatricial bands in the vagina. Further questioning elicited the fact that one month after marriage the patient had had a severe attack of ovarian and pelvic inflammation, which would account for the presence of the cicatricial bands. Judging from the ovarian and pelvic tenderness, the various pains seemed entirely reflex in origin; but pursuing a routine practice, the urine was subjected to a microscopic and chemical examination, which at once cleared up the diagnosis. The urine contained much pus, mucus, desquamated epithelium, and bacteria. At no time in the examination did the symptoms point to the bladder as the chief cause of trouble. The condition of the vesical membrane indicated that irrigation was the proper treatment, and this was at once resorted to. Copious amounts of milk, Manitou and artesian water, and flaxseed lemonade were used as diluents. At first, the irrigations were practised only three times a week; but repeated microscopic examinations showed that the development and ravages of the bacteria were not coming under control. It was then decided to irrigate once a day, after which rapid and constant improvement followed. The aseptic and antiseptic precautions already detailed were carried out with unremitting care. In this, as in the other cases, the bowels and portal circulation were kept free.

Toward the end of the treatment, several injections of a very weak solution of argentic nitrate were given, but the patient bore them poorly and they were discontinued. The case was concluded without resort to medication, except for the exhibition

of the fluid extract of corn-silk. When last seen, the patient had become strong and able to walk about briskly with comfort. Microscopic examination of the urine revealed absolutely no pus, bacteria, or other pathologic products.

In the foregoing discussion no claims are made for originality in the principles of treatment. I have wished to emphasize the importance of rigid adherence to asepsis and antisepsis, and the necessity of an accurate and impartial standard of estimating results, which can only be obtained by an intelligent use of the microscope.

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